

Forestry-Riparian, Decision Rationale**C. ADDITIONAL MANAGEMENT MEASURES – FORESTRY**

PURPOSE OF MANAGEMENT MEASURE: The purpose of this management measures is to identify additional management measures necessary to achieve and maintain applicable water quality standards and protect designated uses for land uses where the 6217(g) management measures are already being implemented under existing nonpoint source programs but water quality is still impaired due to identified nonpoint sources.

CONDITION FROM JANUARY 1998 FINDINGS: Within two years, Oregon will identify and begin applying additional management measures where water quality impairments and degradation of beneficial uses attributable to forestry exist despite implementation of the 6217(g) measures.

PROPOSED FINDING: Condition Not Met**RATIONALE:**

Protection of Riparian Areas: Oregon relies on both regulatory and voluntary measures to provide riparian protections for medium and small fish bearing streams (type “F” streams) and non-fish bearing streams (type “N” streams). Generally, under the current Forest Practices Act (FPA) rules, no tree harvesting is allowed within 20 feet of all fish bearing streams, as well as medium and large non-fish bearing streams, on private lands. Also, all snags and downed wood that do not represent a safety or fire hazard, must be retained within riparian management areas around small and medium fish bearing streams that measure 50 and 70 feet, respectively. In addition, the FPA rules establish basal area targets for some riparian management areas. For example, along medium fish bearing streams, there is a minimum tree number requirement of 30 trees per 1000 feet. Oregon has no harvesting restrictions around small non-fish bearing streams.

In addition to regulatory requirements, the Forestry industry has adopted voluntary measures to protect riparian areas for high aquatic potential streams (i.e., streams with low gradients and wide valleys where large woody debris recruitment is most likely to be effective at enhancing salmon habitat). These voluntary measures include large wood placement, retaining additional basal area within stream buffers, large tree retention, and treating large and medium sized non-fish streams the same as fish streams for buffer retentions.¹

However, based on the results of a number of studies including those summarized in the following paragraphs, NOAA and EPA find that additional management measures, beyond those in FPA rules (and the voluntary program), for forestry riparian protection around medium and small fish bearing streams and non-fish bearing streams are necessary to attain and maintain water quality standards and to protect designated uses. Therefore, per the condition on the federal agencies earlier approval of Oregon’s coastal nonpoint program under CZARA, Oregon must still adopt additional management measures applicable to the forestry land use and forested areas in order to protect small and medium

¹ According to Oregon’s March 2014 coastal nonpoint program submittal, information on voluntary efforts was reported to the Oregon Watershed Restoration Inventory. <http://coastalmanagement.noaa.gov/nonpoint/oregonDocket/StateofOregonCZARAsubmittal3-20-14.pdf>

fish bearing streams and non-fish bearing streams from pollution attributable to forestry practices in riparian areas.

A significant body of science, including: 1) the Oregon Department of Forestry's (ODF) Riparian and Stream Temperature Effectiveness Monitoring Project (RipStream)²; 2) "The Statewide Evaluation of Forest Practices Act Effectiveness in Protecting Water Quality" (i.e., the "Sufficiency Analysis")³; and 3) the Governor's Independent Multidisciplinary Science Team (IMST) Report on the adequacy of the Oregon forest practices in recovering salmon and trout⁴, indicates that riparian protection around small and medium fish bearing streams and non-fish bearing streams in Oregon is not sufficient to protect water quality and beneficial uses. The federal agencies relied on each of these studies in proposing that the State had failed to submit an approvable program on the basis of this condition.

As early as 1999, the IMST study found that the FPA rule requirements related to riparian buffers and large woody debris needed to be improved. Based on its scientific analysis, the IMST team concluded that the existing regulatory approach and voluntary measures were not sufficient for the recovery of wild salmon because the rules are dominated by site and action specific strategies which are not sufficient for the recovery of critical habitat for wild salmonids.⁵ The IMST team made the following recommendations: 1) because non-game fish and other aquatic organisms play a role in a functioning stream system, and the distribution of salmonids will change over time, non-fish bearing streams should be treated no differently from fish-bearing streams and the same buffer requirements should be applied to both stream types⁶; 2) there should be an increase in the basal area and requirements for riparian management areas for both small and medium streams, regardless of the presence of fish; and 3) there should be an increase in the number of trees within the riparian management area for both fish and non-fish bearing small and medium streams.⁷

² Three peer-reviewed articles present the results of the RipStream analysis:

Dent, L., D. Vick, K. Abraham, S. Shoenholtz, and S. Johnson. 2008. Summer temperature patterns in headwater streams of the Oregon Coast Range. *Journal of the American Water Resources Association* 44: 803-813.

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³ Oregon Department of Forestry and Oregon Department of Environmental Quality. 2002. Sufficiency Analysis: A Statewide Evaluation of Forest Practices Act Effectiveness in Protecting Water Quality, Oregon Department of Forestry and Oregon Department of Environmental Quality. October 2002.

⁴ Independent Multidisciplinary Science Team. 1999. Recovery of Wild Salmonids in Western Oregon Forests: Oregon Forest Practices Act Rules and the Measures in the Oregon Plan for Salmon and Watersheds. Technical Report 1999-1 to the Oregon Plan for Salmon and Watersheds, Governor's Natural Resources Office, Salem, Oregon.

⁵ Independent Multidisciplinary Science Team. 2.

⁶ Ibid. 21 and 43.

⁷ Ibid. 44-45.

The 2002 Sufficiency Analysis found that the FPA's riparian buffer protections for small and medium fish bearing streams may cause short-term increases in water temperature for some of these streams.⁸

The 2011 RipStream reports found that FPA riparian protections on private forest lands did not ensure achievement of the Protection of Cold Water criterion (PCW) under the Oregon water quality standard for temperature.^{9 10} The PCW criterion prohibits human activities, such as timber harvest, from increasing stream temperatures by more than 0.3 °C at locations critical to salmon, steelhead or bull trout. Specifically, the RipStream analysis found there was a 40 percent increase in the probability that stream temperatures would exceed the PCW criterion for small and medium fish bearing streams in the Oregon Coast Range.¹¹ It should be noted that, most of the privately held and state forest land parcels analyzed for the study had greater no-cut buffers than required under the FPA.¹³

The RipStream analysis found that greater temperature increases occurred on private sites that had riparian no-cut buffers approaching the FPA rule requirements. (The study indicated the increases in temperature were due to shade loss and that both riparian canopy levels and tree height determined the amount of shading provided to a stream.¹⁴ The study did find that timber harvest conducted on state forest lands, where greater riparian protections are required, met the PCW requirements.¹⁵

Oregon also has been investing in three paired watershed studies¹⁶. These studies are designed to analyze the effects of timber harvesting on a watershed and reach scale. Several commenters have cited the paired watershed study as evidence that the current FPA practices for riparian protection are effective at achieving water quality standards and protecting designated uses. Unpublished preliminary data from the Hinkle Creek study indicate that changes in stream temperature after timber harvesting along non-fish bearing streams were variable. In addition, there was no measureable downstream effect on temperatures.¹⁷ However, the variation in stream temperature and overall net observed temperature

⁸ Oregon Department of Forestry and Oregon Department of Environmental Quality. 44-45.

⁹ Groom, J.D., Dent, L., Madsen, L.J. 2011. "Stream temperature change detection for state and private forests in the Oregon Coast Range". WATER RESOURCES RESEARCH, VOL. 47, W01501, 12 PP., 2011.

¹⁰ Groom, J.D., 2011. "Update on Private Forests Riparian Function and Stream Temperature (RipStream) Project". Staff Report; November 3, 2011.

¹¹ Ibid. 2.

¹³ Groom, J.D., Dent, L., Madsen, L.J., 2011. "Stream temperature change detection for state and private forests in the Oregon Coast Range". WATER RESOURCES RESEARCH, VOL. 47, W01501, 2 PP., 2011.

¹⁴ Groom, J.D., Dent, L., Madsen, L.J., Fleuret, J. 2011. "Response of western Oregon (USA) stream temperatures to contemporary forest management". Forest Ecology and Management 262 (2011) 1618-1629.

¹⁵ Ibid. 2. 3. .

¹⁶ <http://watershedsresearch.org/watershed-studies/>

¹⁷ Watersheds Research Cooperative 2008. Hinkle Creek Paired Watershed Study. http://oregonforests.org/sites/default/files/publications/pdf/WRC_Hinkle.pdf

decrease may be attributable to increased slash debris along the stream after harvest, as well as a likely increase in stream flow post-harvest that could prevent an increase in temperatures and contribute to lower mean stream temperatures.¹⁸ Therefore, there may be other factors at play that make it difficult to draw any definitive conclusions about the adequacy of the FPA practices from these studies' results. In its evaluation of the study results, DEQ concluded that temperature data from the Hinkle Creek and Alsea River studies show that for fish-bearing streams, temperature increases downstream from the harvest sites were very similar to the increases found in the RipStream study.¹⁹

NOAA and EPA acknowledge that Oregon is working to address some of the inadequate riparian protection measures in the FPA. The Oregon Board of Forestry (Board) has the authority to regulate forest practices through administrative rule making and could require changes to the FPA rules to protect small and medium fish bearing streams. The Board, recognizing the need to better protect small and medium fish bearing streams, directed ODF to undertake a rule analysis process that could lead to revised riparian protection rules. At its September 2014 meeting, the Board voted unanimously in favor of continuing to analyze what changes might be needed in the Oregon Forest Practice Rules to provide greater buffer protection for medium and small fish bearing streams on private forest lands. NOAA and EPA encourage the State to move forward with this rule making process expeditiously. Until more protective FPA rule changes are adopted, the federal agencies would not consider them as part of the State's coastal nonpoint program.

Ex. 5 - Deliberative

¹⁸ Kibler, K.M. 2007. The Influence of Contemporary Forest Harvesting on Summer Stream Temperatures in Headwater Streams of Hinkle Creek, Oregon. Thesis for the degree of Master of Science in Forest Engineering presented on June 28, 2007. Oregon State University. http://watershedsresearch.org/assets/reports/WRC_Kibler,Kelly_2007_Thesis.pdf

¹⁹ Seeds, J., Mitchie, R., Foster, E., ODEQ, Jepsen, D. 2014. "Responses to Questions/Concerns Raised by Oregon Forestry Industries Council Regarding the Protecting Cold Water Criterion of Oregon's Temperature Water Quality Standard", Oregon Department of Environmental Quality and Oregon Department of Fish and Wildlife Memo. 06/19/2014

²⁰ Independent Multidisciplinary Science Team. 1999.

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Comment [CJ1]: Is this restriction just for private lands?

Comment [HA2]: The buffers are different for federal lands and may be different for forest lands owned and managed by the State.

In addition to regulatory requirements, the Forestry industry has adopted voluntary measures to protect riparian areas for high aquatic potential streams (i.e., streams with low gradients and wide valleys where large woody debris recruitment is most likely to be effective at enhancing salmon habitat). These voluntary measures include large wood placement, retaining additional basal area within stream buffers, large tree retention, and treating large and medium sized non-fish streams the same as fish streams for buffer retentions.¹

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The 2002 Sufficiency Analysis found that the FPA's riparian buffer protections for small and medium fish bearing streams may cause short-term increases in water temperature for some of these streams. As early as 1999, the IMST study found that the FPA rule requirements related to riparian buffers and large woody debris needed to be improved. Based on its scientific analysis, the IMST team concluded that the existing regulatory approach and voluntary measures were not sufficient for the recovery of wild salmon because the rules are dominated by site and action specific strategies which are not sufficient for the recovery of critical habitat for wild salmonids.⁵ The IMST team made the following recommendations: 1) because non-game fish and other aquatic organisms play a role in a functioning stream system, and the distribution of salmonids will change over time, non-fish bearing streams should be treated no differently from fish-bearing streams and the same buffer requirements should be applied to both stream types⁶; 2) there should be an increase in the basal area and requirements for riparian management areas for both small and medium streams, regardless of the presence of fish; and 3) there should be an increase in the number of trees within the riparian management area for both fish and non-fish bearing small and medium streams.⁷

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Comment [HA3]: The Figures that demonstrate this point are in a draft study. Should we remove this statement?

Oregon also has been investing in three paired watershed studies¹⁶. These studies are designed to analyze the effects of timber harvesting on a watershed and reach scale. Several commenters have cited the paired watershed study as evidence that the current FPA practices for riparian protection are

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¹⁰ Groom, J.D., 2011. "Update on Private Forests Riparian Function and Stream Temperature (RipStream) Project". Staff Report; November 3, 2011.

¹¹ Ibid. 2.

¹² In Oregon, timber harvests on state forest land need to preserve a 25-foot no-cut buffer and an overall riparian management area of 170 feet. Limited harvest is allowed within 100 feet of the streams to achieve mature forest conditions and throughout the rest of the riparian management area, a density of 15 to 70 trees per 1000 feet must be maintained. Ibid. 2, 3.

¹³ Groom, J.D., Dent, L., Madsen, L.J., 2011. "Stream temperature change detection for state and private forests in the Oregon Coast Range". WATER RESOURCES RESEARCH, VOL. 47, W01501, 2 PP., 2011.

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effective at achieving water quality standards and protecting designated uses. Unpublished preliminary data from the Hinkle Creek study indicate that changes in stream temperature after timber harvesting along non-fish bearing streams were variable. In addition, there was no measureable downstream effect on temperatures.¹⁷ However, the variation in stream temperature and overall net observed temperature decrease may be attributable to increased slash debris along the stream after harvest, as well as a likely increase in stream flow post-harvest that could prevent an increase in temperatures and contribute to lower mean stream temperatures.¹⁸ Therefore, there may be other factors at play that make it difficult to draw any definitive conclusions about the adequacy of the FPA practices from these studies' results. In its evaluation of the study results, DEQ concluded that temperature data from the Hinkle Creek and Alsea River studies show that for fish-bearing streams, temperature increases downstream from the harvest sites were very similar to the increases found in the RipStream study.¹⁹

Comment [CJ4]: Meaning what? What is the significance of this finding?

Comment [HA5]: It is to show that the findings from the two studies on this particular issue are consistent – nothing more or nothing less

NOAA and EPA acknowledge that Oregon is working to address some of the inadequate riparian protection measures in the FPA. The Oregon Board of Forestry (Board) has the authority to regulate forest practices through administrative rule making and could require changes to the FPA rules to protect small and medium fish bearing streams. The Board, recognizing the need to better protect small and medium fish bearing streams, directed ODF to undertake a rule analysis process that could lead to revised riparian protection rules. At its September 2014 meeting, the Board voted unanimously in favor of continuing to analyze what changes might be needed in the Oregon Forest Practice Rules to provide greater buffer protection for medium and small fish bearing streams on private forest lands. Previous studies have shown that when applying FPA buffers to these waters, temperatures will increase above the PCW criterion 40% of the time. NOAA and EPA encourage the State to move forward with this rule making process expeditiously. Until more protective FPA rule changes are adopted, the federal agencies would not consider them as part of the State's coastal nonpoint program.

Ex. 5 - Deliberative

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Oregon

¹⁷ Watersheds Research Cooperative 2008. Hinkle Creek Paired Watershed Study.

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